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BRITISH AFFAIRS

A QUARTERLY REVIEW

TERCENTENARY OF THE ROYAL SOCIETY

BRITAIN AND EUROPE

From London to Bonn—EFTA Goes Ahead
Commonwealth Preference and European Tariffs

NUCLEAR POWER IN BRITAIN

WORLD DEVELOPMENTS

Britain and the Underdeveloped Countries
Education in British Africa

British Sports Cars—Television in Schools—The Post Office
Sadler's Wells and the Royal Ballet

VOL. IV, NO. 3—SEPTEMBER 1960

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BRITISH AFFAIRS

Vol. IV, No. 3 — September 1960

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British Affairs

Opening the highly successful British Exhibition at the New York Coliseum, June 10, Prince Philip said:

"Britain is not just an old country of tottering ruins inhabited by idle roués in eyeglasses . . .

"Remember that these same people started the industrial revolution, built more and greater ships than any other country in the world . . .

"It is true of course that the plumbing in some of our older houses is not all that it might be; but that does not alter the fact that three out of every five gas turbines flying or on order in the entire Western World are British, or that one third of the world's merchant tonnage is equipped with British radar.

"If you suspect that we are living in the past, forget it. We simply like to carry our history with us, as we face the uncertain future."

October 1 sees the birth of the Independent Federated States of Nigeria. Nigeria with a population of 35 million (compared with 5 million for Ghana, 13 million for the Belgian Congo, 5 million for Mali) takes her place in the world of nations with a solvent Treasury, an effective Civil Service and Armed Forces of which she is justly proud. Nigeria is only the latest (and most important) British territory to become self-governing. A time-table for other territories is given on page 131.

As this issue of BRITISH AFFAIRS goes to press, Britain's relationship with the European Continent may be entering a new phase. On both sides there have been new expressions of will to achieve the reality of a United Europe both in the political and the economic fields. Professions of faith do not themselves remove the various practical obstacles on both sides: more practical ways of achieving unity do however appear to be under discussion. A unified system which ignores the real problems of its constituent members would not survive long. The "will for unity" involves making allowances for the legitimate interests of not six countries only; nor six countries plus seven more. The goal will be to unite all Western Europe. As many as twenty countries could be involved.

Britain's own economic affairs have entered the second half of the year with the gold reserves rising, contrary to the usual trend in the third quarter; but this is only after quite severe measures have been taken to limit the rate of credit expansion in Britain and after a fairly serious trend has developed in the export/import relationship. A significant figure is the increase of 60 per cent in United States exports to Britain in the first six months of this year compared with the corresponding months of 1959.

D. ISAACVS NEWTON EQVES
REG. SOCIETATIS PRÆSES. AN.^o 1703.



Sir Isaac Newton

1642-1727

THE ROYAL SOCIETY

The Royal Society of London for the Promotion of Natural Knowledge celebrated its tercentenary in July. What started out as an "invisible college" meeting surreptitiously while Britain was torn by the civil war is now the oldest and possibly the most distinguished scientific society in the world.

Unofficially the history of the Society goes back to the 1640's to the meetings of a small group of inventive, curious men who questioned all existing doctrine on natural phenomena until it should be proved by verified observation. The group was scattered by the outbreak of civil violence, but with the return of the monarchy in 1660, its members formed themselves into a Society and were granted permission by Charles II to use the title "Royal Society."

The Society was remarkable from the beginning for the breadth of its interests. Its history is bestrewn with distinguished names and events. Benjamin Franklin, for example, elected a Fellow in 1756 was able during the American War of Independence to safeguard from molestation by the American Navy the scientific exploration of Captain Cook whose voyages were sponsored by the Society.

Fellows have included the greatest names of the scientific world — Sir Isaac Newton, elected in 1671 and President from 1703 — 1727; Halley, discoverer of the comet; Cavendish and Watt, famous for work on the composition of water; Faraday, Clerk Maxwell and Kelvin, founders of modern electricity and electronics; Thomson and Rutherford, who laid the foundations of modern nuclear physics; Darwin; Lister; and Parsons, inventor of the steam turbine.

Today, there are two categories of Fellows, apart from Royal Fellows who are members of the Royal Family. First, the main body of Fellows who must be citizens of the British Commonwealth or the Irish Republic. They number 614. Second, the Foreign Members numbering at present 63, including 21 from the United States. Close and friendly association with scientists of other countries has been a feature of the Society from earliest times. Twenty-three Society Fellows and 28 Foreign Members are Nobel Laureates.

Britain and Europe

- FROM LONDON TO BONN

- EFTA GOES AHEAD

- COMMONWEALTH PREFERENCE AND
EUROPE'S TARRIFFS

- FROM LONDON TO BONN

Two vital statements affecting the relations of Britain and Europe made late this summer:

First, in the House of Commons. On July 25 the House of Commons debated the motion, introduced by the Secretary of State for Foreign Affairs:

“That this House recognizes the need for political and economic unity in Europe, and would welcome the conclusion of suitable arrangements to that end, satisfactory to all the Governments concerned.”

The House divided: Ayes 215, Noes 4. Support for the motion was bipartisan. The four dissenters wished not to stay out of Europe but to join the Six Nation European Economic Community.

Second, Mr. Macmillan's discussions in Bonn with Dr. Adenauer resulted in a communique issued on August 12. The key passage is given in the Box on page 106.

The significance of these two statements is that between them they offer good hope for harmonizing European policies, so strengthening the West.

THE BRITISH CASE

The British declaration of readiness to find a rapprochement between the two groups is not new; but the revealed attitude of the House of Commons is highly significant. This important debate showed that Britain was ready to join Europe but not to sign the Treaty of Rome *unconditionally* or to regard that as the only way forward.

Considerations emerged which have to be taken account of by all sideline players of the United Europe game:

First Britain ranges herself firmly in favor of a United Europe to which she belongs.

Second Britain's signature to the Treaty of Rome is not the only way nor is it the best way to unity.

Third The EFTA partnership is a going concern no less than is the European Community. Britain cannot simply walk out of that partnership.

Fourth The Six Treaty of Rome countries had not *at that time* shown any readiness to unstitch their treaty in order to admit Britain or the others.

Fifth The Six Treaty countries had not *up to that time* shown any readiness to come to *any* agreement with the other major European countries except on the basis of 100% acceptance of the detailed provisions of the Rome Treaty.

Sixth Any implementation of the resolution in favor of the political and economic unity would have to take account of Britain's existing commitments outside Europe: Britain would be the biggest member of any potential European partnership. The House made it clear that it would endorse no move inimical to Commonwealth interests. It was hardly less outspoken on the matter of British agriculture (but in this regard was no more or less defensive of existing rights than are the Rome Treaty countries themselves).

PROGRESS AT BONN

Turning to the Bonn Communique, the significant point here is that the British and German statesmen consider the international outlook too grave to allow the differences between their respective European groups to harden; and that the responsible Governments must take over from the international civil servants in trying to bring about a rapprochement.

What was in fact decided in Bonn was that both sides should investigate the manner in which Britain's problems in regard to European trade might be solved; for instance how Commonwealth free entry can be preserved in a European-wide trading area. Once the German and British experts have got some of their ideas down on paper an exchange of views is to take place through diplomatic channels, in the first instance between Germany and the United Kingdom. As one person at Bonn put it; "We will sort out our ideas, and if either side comes up with any which look like starters we will see how they might be translated into practice."

Mr. Macmillan and Dr. Adenauer can only speak for their own countries. Both have pointed out repeatedly that there is no question of either of them acting as spokesmen for their respective groupings. What they can do however is try and work out solutions which they would then seek to persuade their partners to accept. Britain has already informed other EFTA countries of the results of the Bonn meeting and by now the Germans will have done the same for the other members of the Six.

There is certainly as yet no cause for any unrestrained optimism, but at the very least the new attempt to found a solution will be made against a background of greatly improved Anglo-German relations. On his return from Bonn Mr. Macmillan said that the will to solve Europe's problems now existed, "and where there is a will it should not be impossible to find a way." It will probably prove to be a long way, but a first step along it has been taken.

**EXTRACT FROM THE COMMUNIQUE ISSUED
AT BONN, AUGUST 21, 1960.**

"The two Heads of Government attach particular importance to this meeting because latest developments in the international situation make close cooperation of the free world essential.

They found themselves in full agreement in the broad objectives to be followed in the interest of Europe and the free world.

They agreed that it is essential in the interests of European unity that a solution should be found of problems arising from the existence of two economic groups in Europe.

They undertook to study in cooperation with their respective partners all possible solutions of these problems and to exchange ideas.

Both governments see in the unity of free nations and the peace of the world the overriding objectives to which the solution of other problems should contribute."

• **EFTA GOES AHEAD.**

On July 1, 1960, seven countries in Western Europe reduced by one fifth their protective import duties on practically all the industrial products coming from each other.

At the same time in so far as these seven countries still limit imports from each other by "quota" or quantitative import restriction, these quotas are being relaxed to allow 20% more trade.

It is proposed that, by 1970 there will be *free trade* in the goods covered by the Convention of the European Free Trade Association.

Britain is one of the seven member countries. The full membership makes up a single market of 90 million (see p. 109 for other members).

These seven countries are among the most important international traders. Three facts to ponder.

- i. Three-fifths of their foreign business is outside Europe altogether. In the case of Britain 75% or more of her trade is outside Europe. 50% of her total trade is with her Commonwealth partners.
- ii. The seven countries do about a quarter of their business with the European six (Germany being their main trading partner here).
- iii. The seven countries enjoy a higher average standard of living than the rest of Europe.

What do these three facts show? They show that these countries *depend* on free flowing international trade. *They rely to a great extent on the international division of labor.* The high living standards of the 90 million people in EFTA have been established by the importation of goods; for these countries are not endowed by nature to be self-sufficient. Their strength has been built up by buying and selling abroad.

The seven countries need foreign goods, and as they prosper through freer trade among themselves, the demand for imported goods will grow.

They are not likely to fall into a protective ring. They are pledged in GATT to consider the reciprocal reduction of tariffs on a world wide basis. They are ready to find common cause with the other European group—the European economic community—in a United Europe, if terms acceptable to both groups can be negotiated.

In the meantime EFTA is going ahead—reducing barriers to trade between its members.

• COMMONWEALTH PREFERENCES AND EUROPE'S TARIFFS.

Since 1932 the member countries of the British Commonwealth have accorded to each other trade “preferences,” which means that they have reduced the duty charged on imports from each other to a level below that of the tariff raised against countries outside the Commonwealth.

In the case of Britain, a country which has quite high duties on some goods, products of the Commonwealth enter free of duty. Previous to 1932 when Britain had negligible tariffs she could give no preference

because, obviously, where there are no duties in the first place, there can be no preferential duties. Since about 1870 however, Britain's trade had been obstructed by tariffs in every other manufacturing country. In 1915, during World War I, she introduced protective duties on a limited range of goods (the "McKenna" duties). Although these were supplemented in the post war years, such a small range of goods was affected that, until the 'thirties, Britain remained virtually a free trade country, as she had been for close on a century. The Import Duties Act of 1932 imposed a general *ad valorem* tariff on all imports save for about 40 specific items and those covered by previous legislation. Colonial and Commonwealth goods were exempted. The Imperial Economic Conference at Ottawa in 1932 confirmed these arrangements and codified reciprocal concessions by most countries in the (then) British Empire, which, like the Commonwealth today, covered $\frac{1}{4}$ of the world's population.

COMMONWEALTH AND COMMON MARKET

Now, in connection with the discussions for setting up an integrated market in Europe, the question has been raised of whether Commonwealth preference should be allowed to continue. If Britain were to subscribe to the rules of the Treaty of Rome, the treaty which establishes the European Economic Community, of the Common Market as it is known, she would indeed have to abandon her special trade arrangements with the Commonwealth. What would this mean?

First, Britain herself has relatively little to lose. This is how Commonwealth preference affects her own exports: before the War she enjoyed preferences of perhaps ten per cent from other Commonwealth countries and from some Colonial countries. By 1948 the average level had fallen to seven per cent. It has since fallen further. She has enjoyed at one time or another preferences of varying degree on as much as 90 per cent of her exports to two countries only—to Australia and to New Zealand. In two other important Commonwealth markets, South Africa and India, not more than 20 per cent of her exports have benefited from a preference of perhaps 10 per cent. Of the Colonial territories, only Malaya, the British West Indies, Cyprus and Malta have over the years given a marked preference (8 to 13 per cent) on varied items of goods. In the African colonies British goods claim no preference and Hong Kong gives virtually no preference to British goods. Britain therefore has not a great deal to lose if these preferences were denied here. Certainly, they have not been enough to exclude rival traders. Europe has been particularly successful in selling in the Commonwealth, ever since currency restrictions ended.

(Continued on Page 110)

BRITAIN'S PARTNERS IN EFTA

AUSTRIA

Area: 33,000 square miles

Population: About 7 million

Currency: Austrian schilling (approx. 26.03 schillings = \$1)

Principal towns: Vienna, Salzburg, Innsbruck and Linz

Travel time, London to Vienna: by air 3 hours, by surface 26 hours

Total imports from the United Kingdom (1959): £17 (\$48) million

Total imports from the United States (1959): £24 (\$67) million

Principal manufactured goods imported:

Mining, construction and other industrial machinery; chemicals; textile yarns and fabrics; passenger cars; electrical machinery and apparatus; iron and steel.

NORWAY

Area: 124,556 square miles

Population: About 3½ million

Currency: Krone (approx. 7.15 kroner = \$1)

Principal towns: Oslo, Bergen, Trondheim and Stavanger

Travel time, London to Oslo: by air 2 hours, by surface 36 hours

Total imports from the United Kingdom (1959): £60 (\$168) million

Total imports from the United States (1959): £27½ (\$77) million

Principal manufactured goods imported:

Ships and boats; iron and steel, textiles, yarn and fabrics; mining, construction and other industrial machinery; electrical machinery and apparatus; metal manufactures.

SWEDEN

Area: 173,436 square miles

Population: About 7½ million

Currency: Krona (5.18 kronor = \$1)

Principal towns: Stockholm, Gothenburg and Malmo

Travel time, London to Stockholm: by air 3¼ hours, by surface 36 hours

Total imports from the United Kingdom (1959): £115½ (\$323) million

Total imports from the United States (1959): £74 (\$207) million

Principal manufactured goods imported:

mining, construction and other industrial machinery; chemicals; iron and steel; textiles, yarn and fabrics; passenger cars; metal manufactures; ships and boats; clothing; scientific instruments.

DENMARK

Area: 16,600 square miles

Population: About 4½ million

Currency: Krone (approx. 6.9 kroner = \$1)

Principal towns: Copenhagen, Aarhus, Odense and Esbjerg

Travel time, London to Copenhagen: by air 1½ hours, by surface 26 hours

Total imports from the United Kingdom (1959): £90 (\$252) million

Total imports from the United States (1959): £38 (\$107) million

Principal manufactured goods imported:

Chemicals; textiles, yarns and fabrics; iron and steel; mining, construction and other industrial machinery; passenger cars; electrical machinery and apparatus; metal manufactures; ships and boats.

PORTUGAL

Area: 35,404 square miles

Population: About 9 million

Currency: Escudo (approx. 28.90 escudos = \$1)

Principal towns: Lisbon and Oporto

Travel time, London to Lisbon: by air 3 hours, by surface 60 hours

Total imports from the United Kingdom (1959): £23 (\$64) million

Total imports from the United States (1959): £9½ (\$27) million

Principal manufactured goods imported:

Iron and steel; mining, construction and other industrial machinery; electrical machinery and apparatus; passenger cars.

SWITZERLAND

Area: 16,500 square miles

Population: About 5 million

Currency: Swiss franc (approx. 4.33 francs = \$1)

Principal towns: Berne, Zurich, Geneva and Basle

Travel time, London to Zurich: by air 1½ hours, by surface 17 hours

Total imports from the United Kingdom (1959): £54 (\$151) million

Total imports from the United States (1959): £67 (\$188) million

Principal manufactured goods imported:

Chemicals; passenger cars; iron and steel; petroleum products; electrical machinery apparatus; textiles, yarn and fabrics; clothing; metal manufactures.

COMMONWEALTH SALES TO BRITAIN

It is rather a different picture however if we look at the goods which Commonwealth countries sell to Britain. Britain is the Commonwealth's biggest single market. Commonwealth goods have free entry on all but a few items (cars, film, clocks, musical instruments and silk). Commonwealth preference must therefore appear to be important from the point of view of the Commonwealth producers. Their complaint is usually that it is not enough and not as much as originally conceived. For example, no preferences exist on a number of important items on which Britain has no or negligible tariffs; e.g. metals like aluminum, copper and tin, cotton, wool, jute, wood pulp and newsprint. Furthermore, as many of the preferences are *specific* (that is to say so many shillings per hundredweight or pence per pound), their value has declined over the years as prices all over the world have risen. The Commonwealth has however stuck to the rules of GATT. This has prevented any increase in these preferences.

CONFLICTING COMMITMENTS

The foregoing points having been registered, however, the importance of the existing preferences to Commonwealth trade today must be stressed. Over half of the exports of most Commonwealth countries to the United Kingdom enjoy the preference (the exceptions where the percentage affected would be less—but still between 20 and 40 per cent—are Pakistan, Malaya and the Federation of Rhodesia and Nyasaland). Should Britain join the Common Market under the rules as they stand now, all this trade would be affected. It would be quite wrong to suppose that this is a field in which Britain can now take unilateral action.

Not only would trade be affected. It is difficult, perhaps, for foreigners to understand the bonds which unite Britain and the Commonwealth, but recent events in Africa may help to show people how dangerous it would be to treat the affairs of these countries merely as pawns in a game played by the more developed countries. It is inconceivable that in order to enjoy a better trade relation with Europe Britain should subscribe to a system which would require her to impose duties on her Commonwealth partners in cases where none exist today.

Before 1932 as noted earlier, Britain was a free trade country. She then introduced a general tariff but preserved the free trade tradition in relations with the Commonwealth. Any move to remove trade barriers in Europe is well in accordance with Britain's traditions and with her future interests; but to impose duties on Commonwealth countries would be a major step backwards which Britain is not likely to take.

British Sports Cars in America

by

John Dugdale

Although Britain last year brought into the U.S.A. more than 200,000 cars, before the war our imports were a mere handful. They consisted almost entirely of a few MG sports cars bought by enthusiasts who were generally considered quite crazy. These enthusiasts were at the same time the business pioneers like the late Collier brothers, the pre-war MG importers. There was also a continuing business for Rolls-Royce, who in the flush of prosperity after World War I had even established their own American company and assembly plant, of which their present distributor, J.S. Inskip (irreverently referred to as the grand-daddy of the imported car business) was a director. In the great economic crash of the early 30's this enterprise went by the board, not to be revived until the 1950's.

HOW RACING BEGAN IN THE U.S.

The second World War put a new complexion on the car business because hundreds of thousands of Americans went to Britain and to the Continent in the late 40's and learnt all about economy and sports cars. They were young enough not to be unduly influenced by the big American car which, in any case, had been out of production since 1942. The stark, gay British sports car appealed to these American servicemen and the sports car owners club idea was carried back to the states with enthusiasm.

There had been motor races in America from the turn of the century days with the Vanderbilt Trophy races in both the East and West. Indian-

John Dugdale is the resident representative of the British Motor industry in North America. He was appointed in 1958 by the London Society of Motor Manufacturers, who operate in the U.S.A. through their promotional associate company, the British Automobile Manufacturers Association, of which he is also a Vice-President. Up till 1948, he was assistant editor of "The Autocar," one of the most widely read and the earliest of all motoring periodicals. Following this, he held senior executive posts in America with the Rootes group and Jaguar.

When acting as sports editor of "The Autocar," he attended every type of motor sports event throughout Europe and America, as well as competing in some races himself.

apolis, which started out as a truly international event remains on the international calendar to this day, although restricted by the nature of its regulations to specialized American-built cars. Yet it is still one of the great outdoor events of the country.

What was new after the war was the emergence of amateur sports car racing. This started in the east where the Collier brothers had encouraged the first pre-war meetings at Bridgehampton, Long Island and in the New England area. These extended to Watkins Glen, Lime Rock and Thompson, in New York and Connecticut. Suddenly by a brilliant stroke, the Air Force — vastly encouraged by that bold personality, General Curtis Le May — co-operated to make disused war-time airfields and even active air bases available for such races. The Sports Car Club of America seized the opportunity and races were held right across the nation. In California, enthusiasm was probably greater than anywhere else and many regional clubs were formed, including the California Sports Car Club. The end result was that sports car racing became one of America's leading outdoor sports.

FROM AMATEUR TO NEAR-PROFESSIONAL

The great feature of American sports car club activities was the debonair, genuinely amateur atmosphere. The Sports Car Club of America was originally founded and supported mostly by wealthy sportsmen who were determined to develop and preserve the few sports cars in the country and to put this new sport on much the same footing as polo and yachting: Certainly they had something to fear from the worst aspects of American professional racing, with its "Delivery Van Line Special" type of local dirt track event; but popular, amateur participation was encouraged. This led to delightful club gatherings and some very fair advantages for sports car owners wishing to race with the same cars they used everyday.

As time went on, however, sports cars became faster and faster. Prototypes crept into racing led by the extreme developments of the sport in Europe. The Freddy Wacker-Jim Kimberly era of SCCA gave way to the new American near-professional road racing driver. For the first time in living memory Americans appeared high up the select list of road racing drivers vying for the championship of the world. European factory teams now competed for American drivers such as John Fitch, Masten Gregory, Dan Gurney, Ritchie Ginther, Walt Hansgen, Phil Hill and Carroll Shelby. Yet these were the boys who started with MG's, Austin Healeys and Jaguar XK120's in American Sunday afternoon sports car

events. The British cars which made up the major part of the field in American sports car races for the ten years following the war were MG, Austin Healey, Jaguar, Triumph TR, Allard, Aston Martin, etc. Others from Italy and Germany soon followed.

Every weekend across the nation thousands would gather to join in the racing struggle between the owners of British and continental cars. The sport became quite a vogue, producing new fashions and a new intelligencia. New magazines were published and zoomed to record circulations. The SCCA membership swelled to more than 12,000 owners and gained national status.

FASTEST ON LAND

British cars predominate in international motor sport and are currently champion in both Grand Prix and sports car racing.

The land speed record of 394 m.p.h. was established by an all-British car over ten years ago and still stands.

An attempt to break this record will be made by Donald Campbell this fall in an all-British venture at the Salt Flats near Salt Lake City, Utah. The "Bluebird," the car Mr. Campbell will drive, weighs 4 tons, measures 30' x 8' wide x 4'9" high and utilizes the most powerful car engine ever produced.

British Automobile Manufacturers Association.

FAMOUS AMERICAN RACES TODAY

Thus, America quickly developed its motor racing and racing circuits so that several events have appeared on the International Calendar and have been supported by the leading car drivers of the era. Best known is Sebring, in the heart of the Florida peninsula, where an annual 12-hour sports car race has been run for the last 9 years. This consistency has built a great event which is honored by all the top names of motor racing. The main rivalry has been between the British Jaguars and Aston Martins against the fastest sports car teams from Italy — the Ferraris, Maseratis and Lancias. Sebring has seen such masters as Fangio, Mike Hawthorne — both world champions — Stirling Moss, Taruffi, Behra, de Portago, and many others. Some of the greatest races of the year were when Hawthorne in the factory-entered, fuel-injection Jaguar-D rivalled and sometimes won from the great Fangio — 20 years his senior — driving for Italy. There have been no better races, even if an airport circuit can never quite achieve the atmosphere of one developed from a real highway.

In California an excellent circuit has been built at Riverside, 70 miles from Los Angeles near Palm Springs and here the "Los Angeles Times" has annually sponsored a weekend of racing which has attracted for instance, world champion Jack Brabham, and British champion Stirling Moss, apart from the leading Americans. This track is the venue for the new United States Grand Prix in November 1960, where a large influx from Europe of the best drivers and cars is anticipated. At Elkart Lake, Wisconsin, appealing to the great middle West, they have built a special road circuit called "Road America" and the national events there are increasing in importance each year. The San Francisco area has recently developed its own park circuit at Laguna Seco and all over the nation there are now established annual events. This has been just wonderful for British dollar business, because a large proportion of the competing cars inevitably come from English factories and successes foster sales.

SHOULD AMERICA BUILD A SPORTS CAR?

The question then arose in the competitive American mind as to what the Detroit manufacturers were going to do about it. Could not America produce a sports car for the new coterie of American racing drivers? Briggs Cunningham, one of the original powers-that-be of the SCCA, actually set about to build an all-American sports car called the Cunningham which was manufactured in Florida and included a Chrysler engine in a special frame. He valiantly competed against the European factories for several years with considerable success but eventually gave up the tough battle to develop a suitable engine. Ford brought out the Thunderbird calling it, not a sports car, but a 'personal car', since due to economic conditions they had to aim at a wider market than sports cars could then provide. Chevrolet followed with the Corvette.

Fundamentally, the English sports car has been developed by the English road, winding and narrow and not subject to speed limits on the open highway. Driving can be fun in such conditions, whereas America has the problem of developing a sports car when motoring is based on the turnpike and the parkway. Logically these are more likely to develop a land speed record contender than a sporting car! So there are some economic and commercial reasons why the U.S. for all its prowess in the engineering field, has left to Britain and to Europe the development of the "sports car".

"SPORTS CARS ARE FOR SPORT"

We are often asked what is a sports car and many pundits have tried to specify. The only real answer is that "a sports car is for sport". This

means not only sport in the competitive sense on the race tracks but sport for the fun of driving. For such driving, road holding, braking and acceleration are as important as sheer power and speed. A car that will give you all this latter in the true sense is a sports car and this is the appeal of the English sports models today, — the MG, Austin Healey 3000 and Sprite, the Jaguar XKs, the Sunbeam Alpine, the Triumph TR-3, the Aston Martin DB models and many others, less well-known such as the Daimler 250, the AC, the Bristol, the Morgan and recently the Lotus and Cooper models developed directly from successful racing cars.

The British manufacturers feel that sports cars form one of the really continuing markets for their products in America. This is how it began and this surely will continue. Britain is in the strongest position today to supply sports cars. We are the world's biggest producer and the British Motor Corporation is the biggest single manufacturer being responsible for all MG's, and Austin Healeys from its Abingdon-on-Thames, English plant. Since the war, Britain has established an astonishing number of local road racing circuits in private parks supported by all manner of small clubs of enthusiasts. The powerful components and fuel suppliers of the industry and the leading newspapers have adopted an imaginative policy in support of motor racing, thus enabling race organizers to run profitable events sponsored by the advertising and publicity funds of these organizations.

BRITISH AND AMERICAN DRIVERS LEAD THE FIELD

America has done much the same with the result that it is the British and American drivers who dominate the international race tracks of the world today. It used to be the French, Italians and Germans but in the post-war generation this has changed. At any moment, though a great star may arise from one particular country as did Juan Manuel Fangio from Argentina, who sprang from the great 10,000 kilometer long-distance races of that Latin American country to become unchallenged world champion for five years in the 1950's. It is hoped that the current picture in France, where there are so few famous French drivers at this time, will change, encouraged by the French motor industry. It was the French, let it be recorded, who in the 1890's started the sport of road racing.

After 30 years of following international motor racing, which the writer has always considered the greatest contemporary sport, the most exciting aspect of all is the development of road racing of international status in the United States.

Nuclear Power in Britain

by

Sir Roger Makins, G.C.M.G., K.C.B.
*Chairman of the United Kingdom Atomic Energy
Authority*

It is just ten years ago that British scientists and engineers met at Harwell, Berkshire, to discuss the practical application of nuclear energy to the generation of electricity. At this meeting in the autumn of 1950 the concept of Calder Hall in Cumberland, England, was evolved, for, as a result of their recommendations, feasibility studies for a gas-cooled graphite moderated reactor were started. A chain of events began which led to the opening in October 1956 of the world's first large-scale nuclear power station. The international importance of this achievement was signalized by representation from 39 countries at the opening ceremony. The successful operation of Calder Hall encouraged Britain to develop rapidly the commercial application of nuclear energy.

Today, two United Kingdom Atomic Energy Authority stations are now fully operational, at Calder Hall and Chapelcross, Dumfriesshire, Scotland. There are eight reactors in all with a total net output of 300 megawatts of electricity.

PRIVATE INDUSTRY BUILDS POWER STATIONS

Nearing completion are the first of several civil power stations now being built by private industry for the Central Electricity Generating Board which serves England and Wales, and the South of Scotland Electricity Board. All these stations are based on straightforward developments of the Calder Hall type reactor.

Abroad, British industry is actively engaged in the construction of two nuclear power stations: one at Latina near Rome, Italy of 200 MW(e)

In January 1960, Sir Roger Makins succeeded Sir Eric Plowden as Chairman of the UK Atomic Energy Authority. A career diplomat until 1957, Sir Roger went to Washington in 1952 as British Ambassador. In 1957 prior to his present appointment, he moved to the Treasury to take charge of financial and economic affairs.

Sir Roger is no stranger to the problems of the AEA. From 1947-52 he was Chairman of the Official Committee on Atomic Energy which advises the Government on atomic energy policy. In addition, during his periods both in Whitehall and Washington he was concerned with the development of Anglo-American relations in this field.

and one at Tokai Mura in Japan of 160 MW(e). The UK Atomic Energy Authority will supply fuel for these stations and has entered into consultancy agreements with the purchasers on design, component fabrication and construction matters.

In the course of carrying out the program outlined above, Britain has built up great resources of skill and experience in nuclear technology. Theoretical speculations about the virtues of different reactor systems for power generation provide endless topics for discussion among scientists, engineers, economists and politicians; but the value of nuclear power can only be proved when the reactors have been built, commissioned and operated. The United Kingdom has already laid the foundations of her nuclear industry on a scale large enough to meet the undoubted need for more nuclear power in the years to come.

BRITAIN'S NUCLEAR POWER PROGRAM

It is against this background that the recent announcement limiting the rate of nuclear power station construction in the UK should be viewed. Five years ago the Government first announced plans for the commercial exploitation of nuclear energy for the production of electricity. Then the aim was to provide nuclear power stations to give a capacity of 1,500-2,000 megawatts by 1965. In 1957 the target figures was raised to 5,000-6,000 megawatts; a few months later the completion date was extended to 1966 due to restrictions on capital expenditure. The outlook for conventional fuel supplies was such at that time that it seemed likely that these fuels would not adequately supply the country's power requirements. As is well known, coal has since become plentiful in Europe and oil supply prospects have improved.

It is primarily for this reason that the British Government announced in June of this year that future orders for nuclear stations will be placed at the rate of roughly one a year so that by 1968 Britain will have a total nuclear generating capacity of some 5,000 megawatts. The Government announcement added: "The proposed rate of ordering means that at any time there should be five or six stations in various stages of development from design to commissioning. This should fully maintain the rate of development of our nuclear technology and should also sustain a nuclear plant industry capable of competing for overseas business and of expanding to meet the higher level of our own future needs."

Another factor influencing this recent decision has been the unforeseen reduction in the cost per kilowatt of coal-fired generating in the past two years, while at the same time the cost of power from the first nuclear

stations will be somewhat higher than was first estimated. Great progress has already been made however in the reduction of capital costs of nuclear stations, mainly due to improvements in engineering design. The capital costs of the station at Trawsfynydd are expected to be in the region of £ 125 per kw output capacity. This is 20-25 per cent lower than the cost of the first station ordered some 2½ years earlier. At the same time improvements in design have made it possible to extract more heat per ton of uranium fuel than was originally expected.

The cost of electricity from the nuclear power station at Trawsfynydd is estimated to be at base load between 0.65d. and 0.70d. per kwh as compared with 0.5d per kwh for a new large coal-fired station situated on the coal fields. There is reason to expect that the cost estimate for the station at Dungeness will show a further appreciable reduction. Nuclear generation for base load is likely to become cheaper than conventional generation by about 1970.

TYPES OF REACTOR

The strength of Britain's program derives from concentration initially on one basic reactor system, the gas-cooled graphite moderated reactor. All the civil power generating reactors now being built in the United Kingdom are of this type and they all operate on natural uranium. The choice of natural uranium at this stage of nuclear power development assures the user of supplies from several sources.

Britain's first objective, the creation of a domestic nuclear power program, has been achieved and there is good reason to believe that a fully competitive nuclear power economy will emerge from the successful development of the gas-cooled reactor.

Having paved the way with Calder Hall for the first batch of nuclear stations in Britain, the UK Atomic Energy Authority now has the task of developing more advanced types of nuclear reactors with the object of providing progressively cheaper nuclear power. A large long-term research and development program is now under way in which the UKAEA is concentrating on those reactor types which are at present judged to offer the possibility of achieving lower electrical power generation costs.

RESEARCH INTO ADVANCED REACTORS

The advanced reactors on which the Authority is at present concentrating for land-based electricity generating stations are the Advanced Gas-cooled Reactor, the Fast Reactor and the High Temperature Gas-cooled

Nuclear Power Stations under Construction in Britain

	<i>MW</i>	<i>Latest Estimated Dates of Commissioning</i>
Bradwell (Essex)	300	1961-2
Berkeley (Gloucestershire)	275	1961-2
Hinkley Point (Somerset)	500	1962-3
Hunterston (Scotland)	300	1963
Trawsfynydd (Wales)	500	1963-4
Dungeness (Kent)	550	1964-5

Tenders have also been invited from industry for a further station at Sizewell, Suffolk.

Reactor. Two of these, the Advanced Gas-cooled Reactor and the High Temperature Gas-cooled Reactor represent forward steps from the civil nuclear reactors now being built in Britain. In each, a technical advance is required to increase efficiency by increasing the rate at which fuel is burned and raising the working temperature of the fuel. The Fast Reactor, on the other hand, is a system which may well be complementary to the gas-cooled systems, since it offers the prospect of consuming the plutonium produced as a by-product of the earlier systems.

A prototype of the Advanced Gas-cooled Reactor is at present being built at the UKAEA establishment at Windscale, Cumberland. This reactor, which is due for completion next year, will have a thermal output of 100 MW from the reactor which will give a station electrical output of 28 MW electrical. The main feature of the AGR is a new type of fuel element designed to permit higher operating temperatures — over 500 degrees Centigrade as compared with 400 degrees Centigrade in the type of reactor now building. It is expected that following commercial development of this type of reactor, this system should produce electricity at the same cost as the most efficient coal-fired station located near a coal-field.

“DRAGON” — AN INTERNATIONAL COOPERATIVE EFFORT

The Authority has been working on the High Temperature Gas-cooled Reactor for several years. In March 1959 it joined, under OEEC auspices, with eleven other European countries, members of the European Nuclear Energy Agency, in setting up the “DRAGON” project to design, construct and operate a 20 MW(T) experimental reactor.

The DRAGON has two objectives: to carry out a program of research and development on high temperature gas-cooled reactor systems and to

design, construct and operate a reactor based on the results of the research and development work. The initial agreement covers a period of five years. The staff required have been seconded from the member countries, and an international team is now settling down at Winfrith, Dorset. In addition, the various countries will have the opportunity to participate in contracts for research and development work and for the supply and manufacture of plant and equipment.

The reactor design chosen for the project has cylindrical fuel elements in which the fuel inserts are enclosed in an impermeable graphite container. The reactor should permit still higher operating temperatures than the AGR—around 750 degrees Centigrade. It has the advantage that it could lead to the introduction of the Uranium 233-Thorium cycle, thus providing a means of utilizing thorium for power generation.

*International Cooperation—
European Nuclear Energy Agency
(founded under the auspices of OEEC)*

The main, practical cooperative work in West Europe has been done by this agency, open to all West European governments.

Dragon Project In March 1959 the UK Atomic Energy Authority joined other members of the European Nuclear Energy Agency in the construction of an experimental high temperature gas-cooled reactor at Winfrith Heath in Dorset, England. Britain is to provide the greater part of £13.6 million required to carry out the project. During the year scientists and engineers from twelve European countries have begun work at Winfrith Heath. Of the 128 professional staff engaged on the project at March 31, 1960, 74 were British and 54 from the Continent. Constructional work on buildings to house the reactor has already started. The Authority, acting on behalf of the Dragon Board of Management, has concluded an agreement for exchange of information concerning the Dragon reactor and a similar reactor to be constructed in the U.S.

Halden Reactor Britain is cooperating with a number of other members of the European Nuclear Energy Agency in the operation of the boiling water reactor at Halden, Norway. The reactor became critical on June 29, 1959.

Euratom The United Kingdom-Euratom Continuing Committee reviewed plans for cooperation in the field of advanced gas-cooled reactors, fusion and fast reactor techniques. (The Euratom members, the six Economic Community Countries, are all concerned in the practical work of the OEEC Agency, described above).

FAST REACTOR POWER STATIONS

The experimental fast breeder reactor at the UKAEA establishment at Dounreay in Scotland has now completed the first low-power stage of its program to provide experience in the operation of fast reactors and to supply some of the data necessary for the design of future fast reactors. Although primarily an instrument of research, the Dounreay fast reactor has been designed to produce 15 MW of electrical power and it is intended to approach this level of operation in the future stages of its program. It should be feasible to construct full scale fast reactor power stations in the 1970s. Working on the Pu — U.238 breeding cycle, such reactors would make use of the plutonium produced in the Calder Hall type reactors now under construction.

GROWING IMPORTANCE OF MAJOR BY-PRODUCTS

A summary of the development of nuclear energy in the United Kingdom would be incomplete without reference to one of the nuclear industry's major by-products — the manufacture and distribution of radioisotopes and research into their uses. The United Kingdom Atomic Energy Authority has always realized the potential value of radioisotopes to medicine, research and industry. The Isotope Research Division of the Authority has pioneered this new and rapidly expanding field of nuclear energy.

Present studies include the application of radiation to sterilization of materials and as a result of their work a massive radiation source using an isotope of cobalt has been sent to Australia for the sterilization of animal fibers against anthrax. A major development may be the sterilization of prepackaged medical equipment which can be taken from the package at the time of use in an absolutely clean condition and requiring no further treatment.

Production of isotopes for sale in Britain and overseas is undertaken at the Authority's Radiochemical Center, Amersham, Buckinghamshire. Sales have doubled in only five years; for the twelve months to the end of March, 1960, they totalled about £ 1,100,000 against £ 450,000 five years before. Exports have formed a large proportion of these sales, being 60 per cent of the total in 1958-9.

Both in the application of nuclear energy to power and in the use of radioisotopes, Britain has built up an organization which enables it to carry out the extensive research needed for rapid development.

Much has been written on the need for aid to the underdeveloped countries of the world. But only recently has there been any comprehensive attempt to estimate the cost in dollars and cents. And money alone is not enough. The capital providing countries must act as good creditors. This article attempts to define the immensity of the challenge.

Britain and the Underdeveloped Countries

by

Paul Bureau

*City Editor of the "News Chronicle" and
Associate Editor of "The Banker"*

One of the major problems of the age is the gap separating the poorer and industrially underdeveloped countries from the industrial and increasingly affluent societies. The gap is widening. This is due to the fact that capital is naturally attracted to the richer countries. That is where the promise of immediate, reasonable rewards is greatest. It is also where the political risks are smallest.

Another reason why the gap between the rich and the poor countries is widening is the fact that among the poorer and primary producing countries the initial impact of the introduction of modern hygiene is to lengthen the expectation of life. This highly desirable and consciously fostered development taken together with high birth rates has in recent years led to increases in population which have kept pace with and sometimes exceeded the increase in the production of foodstuffs.

GAP BETWEEN "HAVES" AND "HAVE-NOTS" WIDENING

We in Britain have recently spoken of the aim of doubling our standard of living in 25 years. This is by no means an out-of-the-way objective. It would be more than reached if the normal 3 per cent rate of expansion in the national product were maintained over the next quarter of a century. It is well to bear in mind, however, that if over the same period India

were to do twice as well as Britain and quadruple its standard of living, then in terms of present-day pounds sterling, Britain's per capita income would have risen from £350 to £700 but that of India would have risen from £23 to £92 only. In absolute terms, the gap would have widened from £327 to £608 — and this on the assumption that India during this period achieved what would on all accounts be regarded as a phenomenally rapid rate of expansion.

This is a gap separating the vast majority from a highly favored minority of mankind. The underdeveloped countries comprise roughly two-thirds of the world's present population of 3,000,000,000 people. The two largest of these countries are also very nearly the poorest; namely China, with a population of 650,000,000 and income per head of £15 per year and India with 400,000,000 people subsisting on an income of £23 per year per head. In the Commonwealth alone, apart from India, there are another 70,000,000 people with less than £30 per head and a further 14,000,000 with less than £70 per head.

NOT AN ECONOMIC PROBLEM ONLY

To close this gap is not merely an economic problem. It is in the first place, a moral duty — as much moral as was the duty of lifting the “submerged tenth” of our own population above the level of mere subsistence in which they existed until the social services of this century came to their rescue. If we are moving in the direction of “one world”—and every political and economic development suggests that we are—these vast gulfs between the wealth of its different members must gradually be filled in.

It is also a political problem, for the contrasts inevitably breed discontent, envy and therefore instability. These discontents will be harbored by the very races to which all evidence points as those which with the passage of years will represent larger and larger portions of mankind. There is, therefore, the compelling power of danger reinforcing that of moral obligation in tackling the problem of destitution among nations.

The narrowing of the gap, is in the third place an economic and administrative problem. It is administrative because to provide help without effective control, to invest capital in the poorer countries without technical skill and competent administration, is to ensure that these various forms of help are wasted. The sands of ignorance and corruption can quickly soak up the best intentioned and most substantial aids leaving after awhile an even more dangerously barren waste than existed before.

Servants of the Commonwealth

One of the most difficult problems that faces peoples of dependent territories when they obtain their independence is the need for trained public servants—civil, security and police services—if chaos and economic crises are to be avoided.

Knowledge of this fact was a driving force behind the Indianization of the public services in India and Pakistan and the intensified Africanization in Ghana and Nigeria in preparation for independence. But localization of public services cannot be achieved quickly or thoroughly enough. The answer lies in the retention and recruitment of imported administrators and advisers.

The value which is put on the work of British public servants overseas, more than 25,000 of them, is shown by keenness of the newly independent countries of the Commonwealth to employ them—for instance, some 3,000 in Ghana, 1,000 in Malaya and nearly 3,000 in Nigeria.

To help the newly emergent nations foot the bill, the British Government has committed itself to spend between £10 and £20 million a year for the next ten years in making up the difference between local rates of pay and the salary these men would expect to receive elsewhere. This is in addition to the undertakings Britain already gives that when a territory becomes self-governing pensions and conditions of service will be safeguarded and compensation paid to officers suffering premature retirement.

\$35 BILLION ONLY A BEGINNING

The capital required is enormous and must in large part be provided by richer countries. For the poorer countries the “break-through” from poverty to the promise of a better standard of living can only come through a process of industrialization which will call for substantial investment of capital.

The scope of the problem is immense. Mr. Paul Hoffman, the Managing Director of the United Nations Special Fund which was brought into existence in 1959 to carry out major surveys of economic development, has spoken of the need for an additional \$35 billion over ten years from the “have” countries. This is help that will be needed on top of their present effort to enable the economic break-through to be made in the countries with which the Special Fund is concerned — countries from which Communist China is excluded.

A more realistic approach to the size of the problem can be made by starting from the relatively firm and documented demands with which

the West is already confronted. Thus, it can be fairly reliably estimated that, by March of 1961 India will have spent £5,250 million on her Second Five-year-plan; that the Foreign Exchange deficit over this period will amount to more than £1,400 million. This will have been met as to about £1,000 million by foreign aid and investment and as to the remainder by running down Sterling balances which are now at a level below which they can hardly be allowed to fall without danger to the stability of the Indian currency.

These massive figures are exceeded by the projects for the Third Five-year-plan which appear to envisage total capital expenditure equivalent of £7,500 million of which very nearly £2,000 million will have to come in the form of outside aid, including not less than £375 million for the service of the existing external debt.

These are the requirements for one country only. There are also calls of a similar nature though not of such massive proportions from Pakistan, Ceylon, Malaya, Ghana and many other under-developed countries. The prospects of mobilizing aid on this scale or even on a scale adequate to make possible somewhat curtailed and more flexible development plans cannot be regarded as promising unless a radical change of attitude can be brought about on the part of the donor countries. And yet, to return for one moment to the Indian Third Five-year-plan, it should be stressed that it will provide work for only about 12,000,000 additional people, thus falling far short of the probable net increase of the working population which is expected to amount to 14,000,000 people during the period of this Third plan.

AMERICAN AID WELL SPENT

It should be realized that the capital-rich countries of the world have already done and are doing a great deal to close this gap. In the immediate post-war years the main burden of such assistance inevitably fell on the United States, the one country whose economy had been immensely strengthened during the years of war.

To mention one item of economic assistance, Marshall Aid, which went not to poor undeveloped countries but to the impoverished countries of Western Europe immediately after the end of the war. Under Marshall-Aid no less than \$8 billion of assistance was given to Western Europe, the bulk of it by way of outright gifts. The help given by the international organizations, and in particular the World Bank, in the twelve years that followed the end of the war was also in large part the canalization of assistance provided in the first place by the United States and lent out in the form of U.S. dollars.

Growth of United Kingdom Government Assistance to Less Developed Nations

<i>Year</i>	<i>£ million Total</i>	<i>(\$ million in brackets)</i>
1951-52	61	(170.8)
1952-53	49	(137.2)
1953-54	52	(145.6)
1954-55	77	(215.6)
1955-56	83	(232.4)
1956-57	76	(212.8)
1957-58	81	(226.8)
1958-59	110	(308.0)
1959-60 (Estimate)	138.4	(387.5)

Recently, however, the situation has entered a new phase. The assistance which the United States gave to Western Europe has been so well used that the recipient countries have, in recent years, got into the position in which they themselves can, and should, share the burden of economic assistance with the United States. For some years past American help including the investment of long-term capital in foreign countries has been such that it has led to an outflow of gold and dollars from the United States — and this in spite of the fact that the U.S. has had a succession of *current account* balance of payments surpluses.

The total outflow of gold and dollars from the United States since 1953 is of the order of \$14 billion. It has recently been increasing, for, in 1958, it amounted to \$3½ billion and in 1959 was around \$4 billion. There may still be a massive reserve position in the United States able to absorb this rate of outflow for awhile but it cannot continue indefinitely.

SIZE OF BRITISH CONTRIBUTION

Britain has, throughout the post-war period, done its full share in providing economic assistance to under-developed countries. The main part of that assistance has, understandably enough, been given to members of the Commonwealth family. The requirements from that quarter have been more than sufficient to absorb the volume of assistance that Britain could safely provide, given her own precarious balance.

There has also been considerable multilateral assistance from Britain which has made subscriptions second only to those of the United States to the World Bank, the International Finance Corporation and the latest

international institution, namely the International Development Association.

The assistance which Britain has been giving to less-developed countries has been rapidly increasing. In the financial year 1959-1960 it is estimated that £138 million was provided by the British Government in the form of grants, loans and other assistance. This was a much larger sum than in any previous year and the increasing demand from these countries for development capital is likely to lead to even larger amounts of aid. As well as money supplied by the Government, British long-term private investment in the less-developed countries has continued at a high level. In terms of its national income, the part which has been played by Britain in providing economic help for the poorer countries of the world will stand comparison with that of any other donor.

“HAVES” MUST ACT AS GOOD CREDITORS

In view of the increase of the calls that are to be made on Britain for this purpose, it would be well to stress that there are serious budgetary and balance of payments problems involved, especially as the British economy is at present fairly fully extended. This investment and aid must come out of the country's present affluence or out of the promise of increased affluence — and this means political decisions concerning the level of taxation. This is the other facet of the political problem of economic aid to the less-developed countries to which reference has already been made. It is a problem which has a political facet not only in international terms, but in terms of domestic fiscal and credit policy.

Finally, it should be stressed that countries which provide the capital and otherwise give economic assistance to their poorer brethren must behave like good creditors. There is little sense in lending money to India, for example, to expand her textile or engineering industries and then refuse the goods which those industries will ultimately be able to produce and export. To do so would be bad logic, since it would be depriving India of the means of meeting the interest on the loans made to her. It would also be a negation of the positive response to the challenge of want. The best, and indeed the only way to meet that challenge is to help the countries to become self-sufficient and thus earn their higher standards of living through their own efforts. The challenge of want will be met not by endless charity, but by constructive investment.

The White Paper Cmnd. 974, “Assistance from the United Kingdom for Overseas Development” (March 1960) is available from B.I.S. Sales Section price 18 cents plus 5 cents mailing.

Education in British Africa

by

W. E. F. Ward

This is the economic problem which faces the educator in Africa: 45 million people spread over an area two-thirds the size of the United States: big distances, thin populations, hundreds of different languages, very little money. Professionally, we shall not be satisfied till every child has a fair chance of getting a good education. Politically, we know that independence, which has already come to several territories, will come to the others before long, whether we have had time to do our job as educators or not. This article may be said to be a teachers view of this problem.

If you put a piece of sodium into a pan of water, it will dash madly from side to side, fizzing until it burns itself up. It is like that with a teacher set down in a country without enough schools. And if you ask the teacher what is his policy, he is apt to reply impatiently that he cannot be bothered with policy when the need is so great. This is just as true in British colonies in Africa as it is in England or America. Questions of color or political status do not come into it. Whether they are Africans, or Americans, or English, a teacher is dealing with people, and he teaches just as instinctively as a duck swims.

But enthusiasm is not enough; educational policy must take account of the vastness of the need, the smallness of the resources and, accordingly, the need to establish priorities. In a moment I shall discuss this. But first I wish to emphasize that in British Africa these professional and financial considerations are the only ones that matter. There is no such thing as an aristocratic or colonialist tradition to make an administrator tell the educator that he should not give too much education. No professional

Mr. Ward has been deeply involved with education in British Africa since 1924 when he went to the Gold Coast (now Ghana) to help in the foundation of Achimote College. He was Deputy-Educational Adviser in the Colonial Office from 1945-56 and since 1946 has been editor of *Overseas Education*. Mr. Ward has represented Britain on a number of occasions at UNESCO Conferences and at UN Special Committee meetings in New York. His publications include *History of Ghana*, *Educating Young Nations* and many text books for African use.

man would work under such conditions. The administrator tells the educator how much money he can have, and encourages him to do the best he can.

The administrator is bound to encourage the educator; for it is the accepted British policy that its colonies are to be given self-government, and how can they govern themselves unless they are educated in preparation for it? Since the end of the war, Ghana, the Sudan and Somaliland have become independent; Nigeria will be independent this year; Sierra Leone next year; and other territories will not be very far behind. The educator has the job of providing these young states with the statesmen, administrators and technologists that they need if their independence is to be a real thing.

THE SIZE OF THE PROBLEM

That is a tall proposition, and it is no wonder that no single British educator in Africa is yet satisfied with what has been achieved. But, like the piece of sodium, we are still fizzing. Education in Africa, like other manifestations of Western civilization, is patchy and uneven. You can walk down a main street in an African city with its big office blocks, department store, banks, cinemas and parked automobiles, and if you turn a few yards out of it you may find yourself among mud huts looking as if the white man had never set foot in Africa. So too you can find high schools, university institutions, and colleges of technology whose buildings and equipment, faculty and pupils, would be a credit to any city in Britain or America. But you can also find establishments so bad as hardly to deserve the name of schools at all, save for the pathetic keenness of their pupils and their untrained teachers.

Just how big is the problem? At the end of the last war, there were fifteen British territories in Africa which were not completely self-governing (excluding the Union of South Africa, but including Southern Rhodesia). They totalled 2,016,000 square miles in area; the total area of the 22 American States west of the Mississippi is 2,147,000 square miles. The African territories had an estimated population — certainly an underestimate, for Africans took great trouble to avoid being counted in a census — of 45,315,000; the western States at the same date had a population of 39,750,000. In other words, British Africa was very nearly as big as America west of the Mississippi, and had a bigger population. Out of the 45 million people, only a tiny handful were Europeans (there are still only 60,000 whites in Kenya), and the African inhabitants spoke over 400 different languages, without counting mere differences of dialect. British rule was very recent and there had not been time to discover and

develop more than a few of the biggest natural resources, such as Rhodesian copper, Nigerian tin, and Gold Coast cocoa*: there is room for more development all right but it will take time. For the time being, Africa is not a rich country. It has poor communications, and very little coal, oil, or electricity.

SOURCES OF FINANCE

In 1958, England spent about \$39 of public money on education per head of the population. In that year, the total Government revenue raised domestically per head of the population — for all purposes, not education alone — was about \$23 in Northern Rhodesia, \$14 in Kenya, and a little over two dollars in Northern Nigeria.

Even in Britain and America there is not enough money to provide all the education that is needed. How much more in the case of the great undeveloped area of Africa. There has, however, been some help from outside. In the last few years we have been getting valuable assistance from American ICA and UN Technical Assistance in the form of expert advice which we don't have to pay for. The University of Ohio, for example, is helping Western Nigeria in training teachers, and there is an increasing number of American advisers paid for by ICA. But our main source of help so far has been the Colonial Development and Welfare scheme of the United Kingdom Government, made possible through money provided by the British taxpayer. Since 1945 this scheme has built six university colleges in Africa, along with several colleges of technology and scores of high schools and teacher colleges. It gives Africa the buildings and equipment, leaving Africa to provide running costs; and it provides hundreds of scholarships to give Africans advanced training in Britain. But it amounts to less than a dollar a year per head of the African population.

HOW BEST TO PROCEED

If our problem thus becomes the familiar one of so much to do, so little to do it with, we must concentrate our resources where they will do most good. We shall waste money and effort if, in the name of fair shares for all, we try to give every child in Africa a brief taste of education. It is better to begin with one school that gives a good education to a hundred children, than with ten bad schools that give a useless smattering to a thousand. The one good school will produce, as the bad schools could

*Most of it was occupied between 1895 and 1902, and we had hardly got our breath before the 1914 war came to set everything back. Effective British rule really dates from 1919; and since then there has been the economic depression of the thirties, and the 1939-45 war.

THE CHANGING FACE OF BRITISH AFRICA

<i>Territory</i>	<i>Population*</i>	<i>Present Status</i>
Federation of NIGERIA (373,250 sq. miles)	34,634,000 (17,000)	Will become an independent sovereign state within the Commonwealth on October 1, 1960. The trust territory — the British Cameroons — will remain under British administration until its future is decided by the U.N.
Federation of RHODESIA AND NYASALAND (487,640 sq. miles)	8,090,000 (340,100)	Enjoys a wide range of responsible self-government. Comprises the self-governing colony of Southern Rhodesia and British Protectorates of Northern Rhodesia and Nyasaland. Conference is to be held toward the end of 1960 to review the Federal Constitution.
GAMBIA (4,003 sq. miles)	276,100 (500)	Enlarged legislature and ministerial system approved September 1959. Elections on the basis of universal suffrage were held in May 1960.
GHANA (91,843 sq. miles)	4,763,000 (7,000)	Became an independent sovereign state within the Commonwealth March 1957. Adopted a republican form of constitution July 1960.
KENYA (224,960 sq. miles)	6,351,000 (271,000)	A legislature composed mainly of members elected on a common roll, with some seats reserved for the minority communities (European, Asian and Arabs) will be introduced in 1961.
SIERRA LEONE (27,925 sq. miles)	2,260,000 (2,000)	Will become an independent sovereign state on April 27, 1961, and desires to become a Member of the Commonwealth.
SOMALILAND PROTECTORATE (68,000 sq. miles)	650,000	Became an independent sovereign state on June 26, 1960, and united with Somalia to form the Somalia Republic on July 1, 1960.
SUDAN (967,500 sq. miles)	10,262,536	Became an independent sovereign state in January 1956. Formerly an Anglo-Egyptian condominium.
TANGANYIKA (362,688 sq. miles)	8,906,000 (123,000)	UN trust territory under British administration. Elections to a new Legislative Council to be held September 1960. Thereafter the Council of Ministers will be reconstituted.
UGANDA (93,981 sq. miles)	5,767,000 (63,000)	Elections to be held in the first half of 1961. The new Legislature will then consist predominately of elected members.

*Non-African population in brackets.

not, educated citizens who will make more good schools possible. If we are setting up the beginnings of an educational system, in a country with a million children of school age, we shall get better results by providing a 4-year primary course for 200,000, a 4-year intermediate course for

100,000, a secondary course for 10,000, and a college education for 2,000, than if we spend all our money on primary education and nothing but primary education until every child is in school. The latter way may be very democratic, but it doesn't work; how is a country to develop if none of its citizens has had more than a primary education? The former method does work; it provides teachers for the primary schools, a nucleus of reasonably well-educated people for business and public administration, and a handful of professional and technical people. As time goes on and more educated people are produced, who will develop trade and industry, and increase their country's wealth so that its education can expand.

THE EXISTING PATTERN

On the whole, education in British Africa is planned on these lines; though nowadays we often have to yield to a strong public demand for universal primary education and thus the proportions of the system are upset. Kenya reckoned in 1958 that of its African children between the ages of 7 and 11, about 91 per cent of the boys and 40 per cent of the girls were attending school: but as we go higher, the numbers fall. Here are some typical figures; in thousands:

<i>Year of school life</i>	<i>Kenya</i>	<i>Tanganyika</i>	<i>Nyasaland</i>	<i>Sierra Leone</i>
1st-4th	503	355	246	{ 57
5th-8th	71	31	17	{
9th-12th	4	3	1	6
college	0.5	0.2	0.03	1.1

If I am shown these figures, I do not need to go to Africa to see that something is wrong. Is it that there are not schools available, or is it that the schools are available, but do not attract the children as they should?

Certainly, it is partly that schools are not available; there are often ten or more candidates applying for each secondary school place. That is simply a question of money. But it is not only this. For one thing, education takes time, and even if all the money we needed were miraculously provided overnight, it would take time to train the extra teachers. For another thing education and other kinds of development go together, and we should not look at the schools by themselves. For example: so far there is very little manufacturing industry in Africa, and nearly all white men in Africa are in white-collar jobs. The African people thus associate education with a white-collar job, and many attempts to popularize technical education have failed. It is no use training electricians and electrical

engineers until there are power stations and a demand for electricity. Power stations need capital, and it is only in the last few years that capital for electrical development on a large scale has begun to flow into Africa. When the electricity is turned on, there will be more chance of making good money in industry, and then Africans will be more ready to send their sons to a technical college, and will keep them at school so that they can qualify to enter it.

TRADITIONAL ATTITUDES A STUMBLING BLOCK

There are two special problems we would dearly like to solve: one is to persuade more parents to send their daughters to school, the other is to persuade them to keep their children at school at least until the end of their 8th school year. On these two points, and indeed generally, the situation gets better every year; but we still have a long way to go. Take the question of girls' education. In some parts of Africa, Islam is strong, and parents just do not believe in education for girls; they marry early and go into purdah. In other parts of Africa, women are independent and run their own trading business; but they keep all their accounts in their head, and do not see that a school education will make their daughters any more useful in the business. And everywhere we meet the idea that Tom must go to school to be trained for a job, but Mary's job is going to be matrimony, and her mother can train her for that at home.

Deep-rooted feelings like these cannot be overcome in a hurry. It is not so long ago that Africans were reluctant to send even their sons to school. Until about 1935 we were begging and coaxing people to send them, but they did not see the sense of 'giving to the Government', as they put it, any boy who was useful on the farm, unless the Government would guarantee him a well-paid job. The modern demand for education began about 1935, and was immensely stimulated by the war. Everywhere except in a few backwaters people are now eager to send their boys to school: but lots of them are still unconvinced when it comes to girls.

WHAT TO TEACH?

It is sometimes suggested that the school curriculum should be more completely modified to suit Africa's needs. There are limits to what can be done in this way. If we are training an accountant, or an engineer, or an architect, we cannot make much change in the curriculum. A balance-sheet and a diesel locomotive are the same in Nairobi as in New York, and an African student wants a qualification which will put him on equal terms with his professional colleagues anywhere in the world — and quite

NIGERIAN INDEPENDENCE— OCTOBER 1, 1960

Nigeria, the most populous state in Africa, will become an independent sovereign nation within the Commonwealth on October 1. On that day Britain will divest herself of her largest remaining dependency and responsibility for 35 million people — almost half the population of all her dependencies.

The UN trust territory of the Northern Cameroons will be separated from Nigeria and administered by Britain until a plebiscite to be held in February 1961, when the people will decide whether they wish to join Nigeria or the newly independent Cameroons. A similar plebiscite will be held in the Southern Cameroons.

Britain and Nigeria will enter into an agreement on defense after independence day. Britain has promised Nigeria a Commonwealth assistance loan of £12 million (\$33.6 million) to run from October 1.

right too. Within those limits, we do what we can. Forty years ago, the curriculum was much the same as in England, but those days are gone. Today, Africans study biology from African plants and animals; they begin their geography and their history with their own region; they study African music as well as Beethoven, and put African sculpture side by side with Epstein. Girls doing home economics learn to use an electric cooker; but they also cook traditional African dishes. We cannot develop all the 400 languages of British Africa; but several of the more important languages in each territory are being developed into modern literary languages and are studied in schools.

The university colleges in Africa have an ingenious system for adapting their curriculum to local needs. A student in Ibadan or Kampala needs as good a degree as he could obtain by coming to London, but he needs a modified curriculum. The University of London has solved the problem in this way. It requires to satisfy itself that the faculty in Africa are academically qualified to be members of the faculty in London; and having satisfied itself of this, it collaborates with them in making the necessary adaptations. The syllabus is modified by agreement between the faculty in London and in Africa; and London collaborates with Africa in setting and marking the examinations to make sure that students in Africa are not being let off too lightly.

The university collaboration is perhaps the best example of what British educational policy is in Africa. We want Africa to have an educa-

tion every bit as good as education in Britain, but different just because Africa's circumstances and needs are different. The distinguished African educator Dr. Aggrey said long ago that nothing but the best is good enough for Africa. We accept that. We know that the best we can do at the moment is nowhere near good enough. We are still faced with the dilemma of quality versus quantity; we could give a good education to some or a bad education to all, but we are not yet able to give a good education to all. But our education is improving, and every step forward makes the next step easier.

SOME QUESTIONS AND ANSWERS

WHAT IS THE AIM OF EDUCATION IN AFRICA?

To enable Africans to stand on their own feet, to run their own government, their own businesses, their own railroads, power stations, research laboratories, and so on.

DOES THIS MEAN YOU WANT TO WESTERNIZE THEM COMPLETELY?

No. We have to give them all we can of Western culture, but we encourage them to retain and develop their own African culture. Africa will make its own selection.

HOW MANY UNIVERSITIES ARE THERE TO TRAIN AFRICANS FOR TOP JOBS?

Six, if you count the one in Khartoum, in what used to be the Anglo-Egyptian Sudan. They have all been built since 1945, mainly with British money. There are several colleges of technology as well, provided in the same way.

BUT THIS DOES NOT SEEM ENOUGH.

No, but there are thousands of Africans studying in Britain and elsewhere as well.

WHO PAYS FOR ALL THIS?

Most of the money comes from the public revenues in Africa, but Britain has given large sums from its own revenue.

ARE AFRICANS IN FACT GETTING THE TOP JOBS?

Yes, nearly all of them in West Africa, and an increasing number elsewhere.

IF BRITAIN IS EDUCATING AFRICANS TO TAKE OVER HER EMPIRE IN AFRICA, WHAT DOES SHE RECKON TO GET OUT OF IT WHEN IT IS ALL OVER?

Friends and partners. But it isn't only Africans we have to think of. In parts of East and Central Africa there are Asians and Europeans as well, settled there for fifty years and more. We hope that these countries will develop into independent multi-racial states.

Educational television started experimentally in a very small way in 1952; long-range experiments began in 1957. Today, television is a permanent part of the educational scene. This article attempts to assess the experience gained from three years of educational viewing.

Television in Schools

When the British Broadcasting Corporation started school television three years ago, the new service naturally drew upon the experience gained in this field in sound broadcasting.

Sound broadcasts to schools were established by the BBC on a regular basis more than 30 years ago. The number of schools receiving them has grown steadily with the years, and now more than 28,000 (more than 70 per cent of all the schools in England, Wales, Scotland and Northern Ireland) receive one or more of the broadcasts. The 55 series range from music programs for very young children in primary schools to talks on current affairs, philosophy, the visual arts and other topics designed for the top grades of secondary grammar schools.

EXPERIENCE GAINED FROM SOUND BROADCASTS

The broad policy for school broadcasting by the BBC and the scope and aims of each series are decided by the School Broadcasting Council for the United Kingdom, a body composed of teachers and representatives of local education authorities, of the Ministry of Education and of other educational organizations.

Each series is regularly reviewed by a sub-committee of the Council. A further check on the educational effectiveness of the broadcasts is provided by the regional education officers of the Council, full-time officials with teaching experience. One of their duties is to hear broadcasts in schools and to report in detail on the way in which they are received by the children, and the use made of them by the teachers. In addition, a selected panel of teachers reports on each program within a few 'days of the actual broadcast, and at the end of each term sends a more detailed report on the effectiveness of the series during the whole period.

In all these ways the producers of the broadcasts are kept in close touch with the educational needs of the schools. These producers (members of the BBC staff whose task is to implement the policy of the School

Broadcasting Council) are themselves former teachers who take every opportunity of visiting schools to hear broadcasts.

EXPERIMENTAL PROGRAMS FIRST

This is the background against which the story of school television must be considered. The story began in 1952, when an experimental series of 20 programs was televised over a closed circuit to six schools in the county of Middlesex, England. The purpose of the experiment was to explore the possibilities of television techniques for the classroom. The results were encouraging, but the need for further research was evident.

There followed a period of delay on the BBC side and on that of the educational world. There were several reasons for this; the resources of the BBC were already being taxed to the utmost by the rapid expansion of its general television service; in the educational world there was some hesitation in embarking at that stage on an experiment which would undoubtedly have far-reaching consequences. In those days there was little money to spare in Britain for experiment or expansion of any kind.

However, in 1955 the BBC was able to announce that further long-term experiments would begin in the autumn of 1957. A special Television Sub-committee of the School Broadcasting Council was set up to take care of the educational policy of the new service.

The first programs consisted of four series chosen with an eye to the needs of the schools and the special potentialities of television as a medium in meeting them. It was considered important to concentrate the experiment within a limited age-range in order to offer education authorities as strong an inducement as possible to equip certain types of school with television sets.

FIRST SERIES ON SCIENCE

The first four series transmitted by the BBC were called "Science and Life"; "Living in the Commonwealth"; "Spotlight"; and "Young People at Work". "Science and Life" started with five programs explaining various ways in which science has helped the medical profession, followed by a unit on "Science and the Weather". These programs were chiefly aimed at Secondary Modern Schools, where there is a shortage of qualified science teachers.

The first year's work was deliberately planned on the basis of six unrelated units, each taking half a term. Although this gave the producers valuable experience in experimenting with different types of material, it posed difficult problems for the schools. In both television and radio, it is

becoming increasingly difficult for teachers to fit the programs into their already overcrowded timetables. Science teachers, who need to spend as much time as possible in laboratory work, are even more conscious of this pressure than their colleagues, and the amount of time spent on follow-up work on the programs was often disappointing.

However, science is obviously a field in which television has much to offer, and the programs have established themselves as a valued part of the regular provision. Those on biological topics have been among the most successful. After the first year, each unit has been of a whole term's duration, and teachers have welcomed the change.

EXOTIC DANCES PALL

The series "Living in the Commonwealth" was intended for children of 11 to 15, special attention being paid to the needs of the younger children within this age-range. Secondary education in Britain starts at about twelve, and in fact a number of primary school classes followed this series. The most successful programs were those which concentrated on everyday life. Food and clothing were always of interest, while exotic dances tended soon to pall. A memorable program was one in which a Malayan Chinese girl gave a demonstration of the use of chopsticks.

In all school programs a major problem is the use of filmed material. The resources of the School Broadcasting Department do not often allow the shooting of special film, especially overseas, and this means that considerable use has to be made of film sequences already shot for non-educational purposes.

This problem is particularly acute in any series of a geographical nature, and "Living in the Commonwealth" inevitably came under criticism on the grounds that images were not always held on the screen long enough for the viewers to assimilate them properly. Nevertheless television can do a great deal to help the geography teacher in the way of travel talks about far-off countries for younger children, and the more "curricular" type of geography for older classes.

CURRENT AFFAIRS THEME

The third series, "Spotlight", took a broad interpretation of current affairs as its theme. At the beginning it dealt with important news topics like "Nuclear Bomb Tests" as well as subjects of perennial interest like "The Police Force". This policy led to some unevenness in quality and uncertainty in aims. Consequently it was decided during the second year

to concentrate more on subjects of immediate topical interest, and this decision was welcomed by the schools.

The news of the day does not always provide a topic which is explicable to children aged 13 or 15; when this happens, the choice falls on an issue behind the news with an obvious bearing on recurring news items. "Race Relations" and "Britain's Fuel" are two examples of this kind of topic.

This change of policy introduced new problems and there were complaints that some of the programs were too difficult for any but the brightest children. How can ideas like Democracy, Communism, the Cold War be explained in simple and concrete terms? How can a speaker without a script be persuaded to use only words and concepts which are within the comprehension of the viewers? It has proved extremely difficult to find performers with expert knowledge of affairs who are at ease before the camera, and who have a gift for clear and simple exposition.

STUDIO — CLASSROOM RELATIONSHIPS

"Spotlight" is an example of the value of the close relationship between studio and classroom on which the BBC's television and sound services are based. Modifications are constantly being introduced into the programs in response to suggestions and criticisms, and the series has made considerable progress during the three years since it began.

Science, geography and current affairs have established themselves as regular all-the-year-round contributions which can use all the power of the medium to enlarge children's experience of the visible world in the best possible way. The fourth of the original series, on "Careers" designed for children in their last year at Secondary Modern Schools, has so far run for a single term in each year. The difficulties peculiar to this kind of series arise from the localization of different industries throughout the country and to the differences in opportunities and interests between boys and girls. Broadcasts of this kind can only act as a general introduction to the problems facing school leavers and some teachers have found selective viewing to be the answer.

These four series have been dealt with in some detail in order to illustrate the particular problems which face the producer in each case. In addition, short runs of programs on Natural History, English, Mathematics, the Visual Arts, Music and Archaeology have been presented. Natural History started with a unit on "Birds" and continued with a term on "Mammals in Britain" and "How Animals Move". Not surprisingly, these programs were very well received; most children are interested in natural history, and in this instance it proved possible to "shoot" film specially for the series.

DIFFICULTIES OF THE DRAMA

The English programs have been mostly devoted to drama, with excerpts from Shakespeare's plays as the main contribution. It is easier to produce plays imaginatively with modest resources in sound than in television, and there were times when the resources available, however skillfully used, seemed inadequate. Again, television cannot suggest in the same way that sound radio can; in Marlowe's "Doctor Faustus", for example, television has to show Helen's face and the cities of the world as displayed to Faustus by Mephistopheles. However ingeniously this is done, the risk of lessening the imaginative effect of the words, is almost impossible to overcome. In spite of these reservations the series was a success with teachers asking for drama programs and for the plays of Shakespeare to be continued on a regular basis.

PROVISION BY COMMERCIAL COMPANIES

The BBC however is not alone in the field. A few months before the BBC programs began in 1957, Associated-Rediffusion, one of the companies under contract to the Independent Television Authority for the provision of commercial television started its own service for schools. These programs are now net-worked by all the commercial companies except one (Granada Television Network Ltd.), which has begun its own service.

Over 1,000 schools are now registered as viewers of Associated-Rediffusion's programs. At first, programs were limited to children of 11-15, mainly in secondary modern schools. Since September 1959 however programs have been introduced for top grades in primary schools (from 9 upwards) and also for sixth forms (the top grade) in secondary grammar schools. Among the most successful so far has been Science, at both primary and secondary stages; English Literature, especially drama; Geography; Arts and Crafts; Music and Social Studies. History has been introduced into several of these subjects. The 1960-61 season includes programs dealing with the "Story of Medicine"; "Books to Enjoy"; Elementary French, English Drama, and "Problems of To-day".

To ensure a two-way flow of information between teachers and producers, education officers from Associated-Rediffusion visit schools to view programs in the classroom. Meetings are held between producers and teachers and a number of schools report regularly on the programs.

Last fall, Granada TV, which operates mainly in northern England, started a Science-for-Schools series called "Discovery", intended for sixth

formers, which went out to over 200 schools. Each talk lasted half an hour and, in the first series, lecturers included such well-known scientists as Sir Edward Appleton, Professor Lovell, Sir John Cockroft and Professor Massey. A second series, dealing with space problems, climate and weather was given in the spring term, and a third in the summer, which covered such diverse subjects as "Life on Other Planets", "Growing Old", "Computer Memories", and "New Techniques in Archaeology". A third company, Scottish Television Ltd., is planning a series of programs of particular interest to Scottish schools.

SUCCESS OF THE EXPERIMENT

So far serious overlaps between the BBC and commercial programs have been avoided, partly because the nature of the BBC's consultative machinery already described makes it necessary for the Corporation to draw up its plans further ahead than the commercial companies. There is also some consultation between BBC officials and the other providers. But whatever their source television broadcasts to schools aim not to provide lessons as such, but to supplement established methods of classroom teaching in subjects in which visual treatment can be of immediate value.

Three years is a short period, but in it, much has been achieved. Television is already a permanent part of the education scene; like sound radio, it is an aid to the teacher, not a substitute for him. Perhaps the best tribute to the success of television in schools is the decision of the BBC, backed by the School Broadcasting Council, to increase the number of series from five to ten as from September 1960, instead of 1961 as originally planned.

Industry Spends £300 Million on Research

Manufacturing industry in Britain spent about £300 million on research and development in 1958 compared with about £190 million in 1955 according to a survey made by the Department of Scientific and Industrial Research. This sum represents 4.2 per cent of manufacturing industry's contribution to national production compared with 3.1 per cent in 1955. The main expenditure was in aircraft (£100 million), electrical engineering (£64 million) and chemicals (£43 million).

About 95 percent of the total expenditure was spent in industry's own establishments and about 5 per cent on payments to other organizations such as cooperative research associations and universities.

The five largest retailers in Britain employ 155,000 people; the British Post Office employs double that number. Its assets estimated at £841 million exceed those of either Unilever or I C I including their subsidiaries. The Post Office is big business; it is also long in business — 300 years.

The British Post Office

The British Post Office celebrates its 300th anniversary this year. In 1660 during the reign of Charles II mounted post boys trotted their ponies along rustic lanes to deliver the mails; today, electronic machines sort letters at the rate of 6,000 an hour. Mail deliveries in Charles' day were uncertain to say the least. Today a letter mailed before 6:30 p.m. will be delivered almost anywhere in the country the following morning. Every twenty-four hours the Post Office, quite apart from all its other business, collects, sorts, transports and delivers 26 million letters and cards, 80 per cent of which are not mailed until after 6 p.m.

The Post Office which now includes Britain's Telephone and Telegraph Service and Post Office Savings Bank is the biggest retailer in the country. It employs over 360,000 people, 90,000 of them mailmen, operates a fleet of 37,000 mail and engineering vans and controls the schedules of 335 trains — fifty of these trains being operated solely for the Post Office.

ROGUES AND PIONEERS

The history of the Post Office is an exciting and colorful one. It is a story tinged with roguery and cloak-and-dagger tactics: of monarchs dipping their fingers into the postal revenues and equally sharp practices by Government officials; of mail coaches racing to beat the darkness and highwaymen lurking in the shadows. It is also a story of great achievements that pioneered postal services, not only in Britain, but throughout the world — the first post offices, early cross-country deliveries to small rural communities, armed mail coaches for express services and the world's first adhesive postage stamp.

PRIVATE ENTERPRISE MAILMEN

Officially the Post Office was established in 1660 in the reign of Charles II when Parliament passed an Act "for the erection and establishment of a Post Office." Unofficially post office history goes back to the 16th century, to the days of the first Queen Elizabeth, who appointed Thomas

Randolph to be Master of the Queen's Posts. The Elizabethans were noted for their commercial enterprise and Master Randolph decided to supplement his small salary from Elizabeth by carrying letters privately. This was a risky business for, then as now (though for different reasons), it was illegal to carry letters privately for payment. Official mail carrying enabled Elizabeth's ministers to keep a check on the plots constantly being hatched against her life. Nevertheless Randolph's trade flourished and others did well too.

These private enterprise mailmen, although strictly illegal, were responsible for some of the important early developments in postal services. For example, Thomas Witterings was the first man to start a regular parcel delivery service between England and the continent of Europe in the early 17th century.

Another, Captain John Manley, was so impressed with the financial possibilities of letter-carrying that he paid Oliver Cromwell the equivalent of \$28,000 for the monopoly rights — a fantastic sum for those days. But it was in the interests of both Cromwell and Manley to limit unofficial mail carrying — Cromwell so that he could impose an iron censorship on all letters into and out of the country, and Manley because other carriers threatened his monopoly. Cromwell's stern measures against rival carriers succeeded and indirectly opened the way for the first official service.

The easygoing reign of Charles II enabled private enterprise carriers to flourish again and the official Post Office suffered heavily as a result. The most ingenious was a Mr. William Dockwra of London who started his own local "penny post" in 1680. In defiance of the Government's searchers employed to seek out violators he spotted 500 of his own private post offices across London. His method was simple and impudent. Letters were collected by messengers every hour and delivered by his own men. In the case of out-of-town or overseas deliveries which were not economic for him to handle Dockwra simply handed them over to the official Post Office. The Government absorbed Dockwra's efficient penny post service in 1682. Twenty-two years later it upped the price to two pennies. But Dockwra's carriers were so bold that even after his offices were closed down they walked the streets ringing handbells making pick-up collections in bags.

BEATING THE HIGHWAYMEN

The primitive road system of late 17th Century England made letter carrying a difficult business. The Post Office confined its service along the so-called main roads to the big provincial cities. If you happened to

live in the country districts you had to make what arrangements you could for letter delivery.

In 1719 an astute business man, Ralph Allen, organized a system of cross-country deliveries servicing rural areas. But the job of the carriers was a hazardous one. They were at the mercy of highwaymen who terrorized the lonely stretches of turnpike roads and defied the death penalty to rob the mails. It took another milestone in Post Office history to remove this threat. Speedy "mail coaches" protected by armed guards marked the end of the highwayman. Letters now reached their destination safely and travelers clamored to ride in the safe, swift coaches. In the early 19th Century in an era familiar to the readers of Dickens the mail coaches were the fastest and most practical means of public transport maintaining advertised schedules, timed to the minute. The mail coach era was brought to an end with the coming of the railroads. The first carriage of mail by railroad was from Liverpool to Manchester in 1830.

AUTOMATIC LETTER SORTING

At present letter sorting is costing Britain £16 million (\$44.8 million) a year. Mechanization offers the best prospect of making any substantial reduction. The ultimate aim of the Post Office is to cut out the human element altogether in mail handling.

Prototype equipment for the experiment consists of two machines known as Letter Coders, a large box containing electronic memory equipment and an automatic letter-sorting machine. Letters are fed into the coding machine where they are coded by means of a pattern of spots—a different combination for each of Britain's 1,800 post towns—stamped onto the surface in phosphorescent ink. The automatic sorting machine into which the letters then flow "reads" this pattern and directs each item into its correct pigeon-hole.

The new equipment, still experimental, does away with all manual sorting, simplifies the work and operates at full speed without being tied to the speed or memory of the operator.

1840 — THE FIRST STAMP

The year 1840 saw the foundations of modern postal practice laid in Britain — and in the world — with the introduction by Rowland Hill of the uniform penny post, a system of postal charge of one penny per half ounce irrespective of the distance the letter was carried. Hill's reforms were revolutionary. His first gummed stamp, the famous "Penny Black", bearing the Head of Queen Victoria, was issued on May 6, 1840.

It's immediate effect was disastrous for Hill. Post Office revenue fell and Hill was fired from his job in the Treasury. But before long the Post Office was paying its way again. His theories vindicated, Hill was re-engaged and later received a Knighthood. Meanwhile his ideas had been seized upon by countries all over the world. Postage stamps had arrived to stay.

THE FIRST PUBLIC TELEGRAPH

However mail delivery was and is only part of the Post Office's responsibilities. The first public electric telegraph service in the world was opened in 1839 between Paddington Station in London and Slough in Buckinghamshire. The Post Office took over control of all inland telegraph systems in 1870. Teleprinter operation for inland transmission superseded the use of a variety of telegraph systems in 1928 and foreshadowed the completely automatic switching system which came into effect in 1954. The first submarine cable across the English Channel (1851) and the first permanent cable across the Atlantic (1866, after three earlier attempts) led to the growth of a world-wide telegraphic network.

The overseas telegraph services were shared until 1950 between the Post Office and Cable and Wireless Ltd. This company was brought into public ownership in 1947. The Post Office acquired the United Kingdom services and operates all overseas tele-communications services from Britain, except for those offered by foreign telegraph companies. Cable & Wireless Ltd. continues to operate its cable and wireless service in a number of foreign territories. A telex system allowing subscribers to communicate by teleprinter via an exchange with subscribers in Britain and overseas was instituted in 1932. Toward the end of this year inland transmission will be fully automatic and from 1961 British subscribers will be able to dial direct to many European countries.

TELEPHONES ALSO

The telephone service developed in the same way as the telegraph service from establishment by private interests (1879) to a countrywide network for most of which the Post Office became responsible in 1912. Today there are more than 7 million telephones in the country and telephones are being connected at the rate of 1,000 a day.

A cross-Channel submarine telephone cable was laid linking London and Paris in 1891 and in 1926 London was established as an International Telephone Center. In 1956 the first-Atlantic cable linking Britain with the United States and Canada — the first long distance submarine tele-

phone cable in the world — was inaugurated and, with more than 50 telephone circuits in operation, now carries an average of 8,000 calls each week. The overseas telephone cables are also used to transmit pictures and television and to relay music and speech for broadcasts. Recent improvements in the design of cables and terminal installations in which the British Post Office and manufacturers have played an important part have greatly improved the efficiency of submarine telephone communication.

STRIDES TOWARD AUTOMATION

Research into ways of speeding up mail deliveries is continuous. For quick transmission of mails within central London the Post Office has for 30 years operated an automatically controlled underground railway that runs 6½ miles connecting six intermediate stations. Improvements include electrical trucks for parcel deliveries controlled by a walking mailman and an ingenious apparatus by which bags of mail are delivered and collected by trains running at express speed. The Post Office has introduced

ELSIE, ALF AND THE SEGREGATOR

Three machines are now undergoing large-scale field trials.

The Segregator which can separate small packets and long and short envelopes at the rate of 72,000 items an hour.

Alf (Automatic Letter Facer). Four Alfs are needed to handle the output of one Segregator. They cancel the stamps and stack the letters into orderly piles.

Elsie (Electronic Letter Sorting and Indicator Equipment). Elsie can sort 6,000 letters hourly into 144 different pigeon-holes and requires only one operator. A manual sorter can only handle 48 pigeon-holes.

machines for sorting letters and parcels and is experimenting with the use of postal codes on letters to enable mechanization of sorting to be extended. Automatic sorting machines are being developed in several countries but Britain is probably the first to use them for sorting ordinary mail posted by the public.

The Post Office is presently carrying out a combination of experiments to assess the feasibility of replacing all the manual sorting which takes place during the journey of a letter by two simple “coding” operations — one to get the letter to the office of delivery and one to direct it to the individual mailman’s delivery round. A similar mechanization drive is being directed toward solving parcel sorting problems. In two major cities

machines capable of handling over 100 parcels a minute are being installed. But whether the sorting is done mechanically or by hand, the Post Office observes one strict rule: each day's mail is dealt with on the day it arrives. There must be no backlog.

MISCELLANEOUS SERVICES

Mail delivery and running the country's telephone and telegraph services is only part of the story. Largely as a result of the extension of social legislation and the widening scope of social services the Post Office acts as agent for other Government Departments and Local Authorities. At the Post Office counter a citizen can draw his pension and family allowance, buy a license for his dog, car, radio or television set and buy National Insurance Stamps. The Post Office Savings Bank is the largest organization of its kind in the world. It has over 22 million active accounts representing some £1,700 million (\$4,760 million).

Although a Government Department, the Post Office is also a trading concern and is required to ensure that its income is sufficient to meet its expenditure taking one year with another. Since 1956 the Post office has been required to contribute £5 million (\$14 million) a year to the Exchequer—this being broadly the amount which it would have to pay in general taxation but for its exemption. Any remaining surplus (in the last financial year £3.3 million [\$9.24 million]) or deficit is carried into a general reserve account.

A plan to give greater commercial freedom to the Post Office is under consideration. Post Office finances would be severed from the Exchequer and the Postmaster General would have greater scope and responsibility for running the Post Office as a self-contained business. This way it is felt the Post Office could continue to meet its social obligations but would be in a better position to adopt and develop as a business seeking to meet and anticipate its customers's demands.

Special Project Grants to Colonial Territories

\$71 million dollars was paid out by Britain in grants for Colonial development, research and welfare in the year ended March 1960. The total of such grants since 1946 comes to \$561.6 million. These special project grants are additional to development loans and administrative grants.

The relationship between the Covent Garden Opera House, the old Vic and the Sadler's Wells Theater has been a complicated and intimate one. Companies — opera, ballet and drama — have moved from one to the other. Part of the story was touched upon in the September 1959 issue; this article continues it.

Sadler's Wells and The Royal Ballet

Sadler's Wells in North London got its name from a certain Mr. Sadler who, in 1683, chose the site of the present theater for a "musick-house" to be built of wood. During its construction a workman blunted his spade against a stone concealing a well which, in pre-Reformation days, the monks of Clerkenwell had used to effect cures. The enterprising Mr. Sadler added a garden to his "musick-house" and invited people to drink the waters of the spring while watching his vaudeville entertainment. He provided a dance band and urged the customers to wash away the unpleasant taste of the well water with a glass of wine. Later such well-known theatrical figures as Edmund Kean, Samuel Phelps and the famous clown, Grimaldi, appeared at the theater. To-day the famous well is hidden beneath the back of the stalls — as unwary patrons know to their cost if they walk too quickly down an unexpected little slope on their way to the bar.

The present theater re-built by the late Lilian Baylis as a sister theater to the Old Vic on the South Bank of the Thames was opened 29 years ago. It was the birth-place both of the Sadler's Wells Opera and of the Royal Ballet, known as the Sadler's Wells Ballet until Queen Elizabeth II gave it its royal name in 1957.

Opera had been given alternately with Shakespeare at the Old Vic since the early years of the century, and at first opera and drama were produced at both theaters. This proved uneconomic, however, and so opera made its permanent home at Sadler's Wells and Shakespeare at the Old Vic.

THE BEGINNINGS OF THE SADLER'S WELLS BALLET

In the new theater, the opera was able to expand and a separate ballet company was formed. The ballet company's first performance, in April 1931, was given by 11 dancers, with Anton Dolin and Lydia Lopokova as guest artists. Madame Lopokova, once a ballerina in the famous Diaghilev troupe and settled in England as the wife of the economist, Maynard Keynes, danced several times with the young company and gave

ROYAL BALLET IN NORTH AMERICA

1960-61 Itinerary

September 11-October 9	New York City	Metropolitan Opera
October 11-13	East Lansing	
October 14-16	Cleveland	
October 18-20	St. Louis	
October 22-23	Denver	
October 25-26	Seattle	
October 27-29	Vancouver, B.C.	
Oct. 31-Nov. 2	Portland, Ore.	
November 4-13	San Francisco	
November 15-16	Sacramento	
November 18-20	Los Angeles	
November 22-23	San Diego	
November 24-29	Los Angeles	
December 2-3	Houston	
December 5-6	New Orleans	
December 7-8	Birmingham, Ala.	
December 9-10	Atlanta	
December 12-15	Washington, D.C.	
Dec. 18-Jan. 1	Chicago	
January 3-4	Rochester, N.Y.	
January 5-8	Detroit	
January 10-14	Toronto	
January 16-18	Montreal	
January 19-20	Burlington, Vt.	
January 21-22	Boston	
January 24-26	Philadelphia	
January 27-28	Baltimore	

it much help and encouragement during the early days. It was, however, Ninette de Valois who may be said to have created the Sadler's Wells Ballet.

Dame Ninette — the title was bestowed upon her in 1951 for her services to ballet — has been in turn dancer, teacher, choreographer. Dancing, however, was never an end in itself for her and she spent much of her time as a small part soloist with Diaghilev studying the Ballet's methods of teaching and production. After two years, she left Diaghilev to found a ballet school of her own. She joined Lilian Baylis at the Old Vic in 1929 to arrange dances for the opera and occasionally provided a modest ballet to precede one of the shorter operas.

For the first years of its life, the Sadler's Wells Ballet was greatly helped by the presence of that fine classical dancer, Alicia Markova, as its prima ballerina. She and Anton Dolin drew the ballet fans while the raw young company was developing into an entity. For Markova, Miss de Valois revived such classics as "Giselle", "Swan Lake" and "The Sleeping Beauty"; but all the time she and a new young choreographer,

Frederick Ashton, working in close collaboration with conductor and musical director, Constant Lambert, were creating new ballets, finding new scenic designers, moulding new dancers. So that when Markova left in 1935, the company had within its ranks several potential stars, including 17-year-old Margot Fonteyn, who scored an immediate success.

When war broke out in 1939, the company had 35 members, three resident choreographers, two conductors and a flourishing school. Only someone as vital and determined as Ninette de Valois in charge could have surmounted the hazards of total war. Bombing drove them from London to the Provinces. They lost most of their male dancers to the Forces. Clothes rationing made new productions difficult and even tights and ballet shoes were hard to come by. But they survived. In January 1946, the main company migrated to the larger stage of the Royal Opera House, Covent Garden, while a second company, the Sadler's Wells Theater Ballet, was formed to perform at the Wells. In 1957 this second company was also transferred to Covent Garden.

OPERA AT THE WELLS

This left the Opera in sole possession at Sadler's Wells. Being a smaller organization and less expensive to run, the Wells has always been able to experiment in a way not possible at Covent Garden. Before the war, its programs included Mozart, Wagner, Verdi and Puccini, but there was also a place for modern English works such as Ethel Smythe's "The Wreckers" and Vaughan Williams' "Hugh the Drover" and "Sir John in Love". Rarities like Rimsky-Korsakov's "Tsar Saltan" and Verdi's "Macbeth" were also given.

The theater suffered little damage during the war and in 1945 it reopened with the world premiere of Benjamin Britten's "Peter Grimes". This was a memorable occasion and the beginning of a new regime at the Wells.

Since then, despite lack of money and rising costs, the opera has done increasingly good work under the directorship of Norman Tucker, a dedicated enthusiast. Not only has he presented many new works, but he has also given chances to young singers, many from Commonwealth countries, young conductors and new scenic designers. Young Colin Davis, obviously destined for world fame as a conductor, joined the Wells 18 months ago and has now been appointed Principal Conductor for the next three years.

Opera at the Wells last season ranged from a magnificent performance of Stravinsky's "Oedipus Rex" to Rossini's "La Cenerentola" and included

"The Flying Dutchman", "Tannhauser", John Gardner's "The Moon and Sixpence" (based on the Somerset Maugham novel), "The Merry Widow", "Figaro", "Don Pasquale" and Bizet's "The Pearl Fishers". During the summer, the company visited Brussels, Antwerp and Paris.

Two years ago, Sadler's Wells added operetta to its repertoire, and this year there was a summer season in London including a racy production of Offenbach's "Orpheus in the Underworld", and Edward German's "Merry England".

Sadler's Wells now has two separate companies, with two orchestras, two choruses and two corps de ballet. Solists and conductors are interchangeable between both companies. Thus one ensemble can tour the provinces or appear abroad while the other plays at Sadlers Well's Theater.

WHERE THE MONEY COMES FROM

The amount of money allotted to Sadler's Wells by the State (through the Arts Council of Great Britain) is small compared with the stage funds enjoyed by European opera houses. In the financial year 1959-60 the Arts Council grant was £200,000. In 1960-61 it will be £275,000. In addition, the London County Council, interested in the Wells from the educational point of view, gave the organization a grant of £35,000 in 1959-60, with an additional £15,000 for structural alterations to the stage. Its 1960-61 grant is only £25,000, with another £15,000 towards the upkeep of the theater.

A further source of revenue has come from recordings. The long playing record of "The Merry Widow" has been popular in the United States and Commonwealth countries as well as in Britain. "Die Fledermaus" and Lehar's "Land of Smiles" have also been recorded and highlights of "Madam Butterfly" and "La Boheme" are now to be put on disc.

BRITAIN'S ROYAL BALLET

To return to the ballet. The removal of the second company to Convent Garden in 1957 meant that both companies — the original Sadler's Wells Ballet and the Sadler's Wells Theater Ballet — were under one roof. The two were fused to become the Royal Ballet. It now became possible, when the occasion demanded, to split this large company without sacrificing quality. There are enough high-ranking ballerinas and principal dancers to man both sections. Last winter, for example, one section was dancing in South Africa, Australia and New Zealand while the other was in London. When Nadia Nerina and her partner were dancing abroad, Beriosova was

at Covent Garden. When they returned, Beriosova flew off to the Antipodes.

ROYAL BALLET IN THE UNITED STATES

This fall the Royal Ballet is again coming to the United States and Canada — for the sixth time. It will have in its repertoire four full-length ballets and the two-act classic, “Giselle” revived specially for Margot Fonteyn, who, with Michael Somes, will head the company. Of the works to be performed in the States, “The Sleeping Beauty” and “Swan Lake” are well-known and well loved. “Ondine” and “La Fille Mal Gardee” are new and both should give great pleasure. Frederick Ashton, who has remained with Ninette de Valois from the beginning and is now the company’s Associate Director and Principal Choreographer, was responsible for both works and they are wonderfully well contrasted.

“Ondine”, a perfect vehicle for the delicate art of Margot Fonteyn, may be familiar to those who have seen the film of the Royal Ballet. Most of Ashton’s major works have been created for Margot Fonteyn. In “La Fille Mal Gardee”, however, it is the sparkling Nadia Nerina and her partner, David Blair, who have the leading parts; “La Fille Mal Gardee” is a particularly interesting work — as well as being one of the most successful that Ashton has ever achieved. It is, in its original form, the oldest surviving ballet of major importance and is, according to Tamara Karsavina, a turning point in the history of ballet. It was first performed in 1789, and is given in Russia today under the title “Vain Precautions”. But, instead of putting on another revival, Mr. Ashton has given the work entirely new choreography — and the most inventive he has contrived for a long time. The work, which is gay, witty and full of opportunities for soloists and corps de ballet was a smash hit in London and should repeat its success in America.

ROYAL BALLET SCHOOL

The Royal Ballet, like the Bolshoi has its own ballet school, now housed at White Lodge, Richmond, birthplace of the Duke of Windsor. This is a day and boarding school for children aged nine to sixteen, who receive a general education as well as training for the ballet. Older pupils are trained at Colet Gardens in Kensington. They live out—in hostels or lodgings—and take only subjects pertaining to ballet.

Teaching is based on the fundamentals of ballet and is of high caliber. The school has attracted young dancers from all over the world who are enrolled in its courses.

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